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Impact of Percutaneous Coronary Intervention on Twelve-month Chronic Total Occlusion Outcomes in Patients with Smoking History

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Background: The impact of percutaneous coronary intervention (PCI) for chronic total occlusion (CTO) in patients with smoking history is not clear. Smoking history is known to have an adverse effect on clinical outcomes of coronary artery diseases. We evaluated the 12-month clinical outcomes between PCI and optimal medical therapy (OMT) for CTO lesions in patients with smoking history.

Methods: A total of 321 consecutive CTO patients with smoking history were divided into 2 groups according to treatment strategy; PCI group (n=145) and OMT group (n=176). Twelve-month clinical outcomes were retrospectively compared between the two groups.

Results: At baseline, patients in the OMT group had a lower left ventricular ejection fraction, and higher prevalence of elderly, cerebrovascular accident, peripheral vascular disease, congestive heart failure, left main disease, multivessel disease, right coronary artery CTO lesion, and collaterals \geq grade 2. Clinical outcomes at 12 months were similar between the 2 groups except lower mortality in the PCI group at univariate analysis. After baseline adjustment by multivariate analysis, 12-month mortality remained lower in the PCI group (OR 0.112, 95% CI 0.014-0.910, $p=0.041$) despite of increased target lesion revascularization (TLR) in the PCI group (table).

Conclusion: In our study, PCI seems to be a favorable choice of therapy for CTO lesions in patients with smoking history in terms of reducing 12-month mortality. Long-term follow up with a larger study population will be necessary for further clarification.

Table. 12-month clinical outcomes

Variables, n (%)	PCI (n=269)	OMT (n=301)	P Value (Unadjusted)	P Value (Adjusted)	OR (95%CI)
Mortality	9 (3.3)	24 (7.9)	0.018	0.041	0.112 (0.01-0.91)
Cardiac death	6 (2.2)	14 (4.6)	0.117	0.165	NS
Non cardiac death	3 (1.1)	9 (2.9)	0.120	0.994	-
Myocardial infarction, MI	6 (2.2)	15 (4.9)	0.082	0.503	NS
Q wave MI	5 (1.8)	9 (2.9)	0.384	0.729	NS
Non Q wave MI	1 (0.3)	6 (1.9)	0.079	0.980	NS
Revascularization	27 (10)	23 (7.6)	0.313	0.253	NS
TLR	22 (8.1)	4 (1.3)	0.000	0.022	6.48 (1.31-32.03)
TVR	27 (10)	17 (5.6)	0.050	0.178	NS
Non TVR	2 (0.7)	7 (2.3)	0.130	0.483	NS
All MACE	36 (13.3)	45 (14.9)	0.593		
TLR MACE	28 (10.4)	20 (6.6)	0.106	0.186	NS
TVR MACE	36 (13.3)	41 (13.6)	0.934	0.994	NS

Adjusted by gender, age, myocardial infarction, hypertension, diabetes, chronic kidney disease, current smoker, multivessel disease, collateral vessels (\geq grade 2), and failed CTO procedure.

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Comparison of 3-year Clinical Outcomes According to the Response to Acetylcholine in Patients with Angiographic Increased Basal Coronary Spastic Tone

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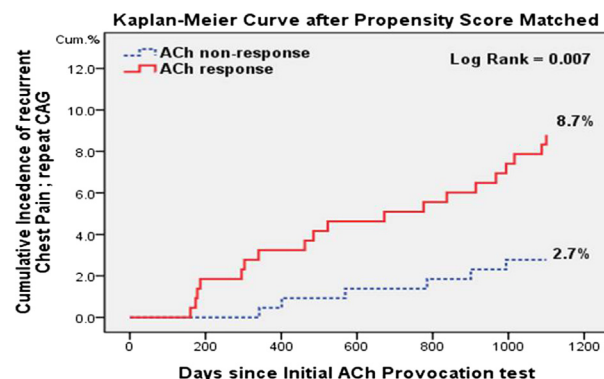
Background: There have been many studies regarding acetylcholine (Ach) induced coronary artery spasm (CAS). However, although spastic coronary artery at baseline coronary angiography is common in clinical practice, clinical outcomes according to the response to Ach in patients with basal CAS are unknown.

Methods: A total of 728 patients without significant coronary lesion who had spastic coronary angiogram at baseline before Ach test defined as % narrowing difference $>30\%$ following intracoronary nitroglycerine injection were enrolled between November 2004 and October 2010. Patients were divided into two groups according to the response to the acetylcholine test (Ach responder group: n=495, Ach non-

responder group: n=233) and clinical outcomes were compared between the two groups up to 3 years.

Results: Baseline characteristics were matched using propensity score matching. Ischemic ECG change during Ach test was more frequent in Ach responder group ($p<0.001$). There was no significant difference in mortality or major adverse cardiac & cerebrovascular events (MACE) between the two groups. However, the Ach responder group showed significant higher rate of recurrent chest pain which subsequently needed re-evaluation of coronary artery (OR; 3.05, 95%CI; 1.32-7.01, $p=0.009$). And this difference remained significant after multivariate analysis of other cardiovascular risk factors (OR; 3.22, 95%CI; 1.43-7.27, $p=0.005$, Fig 1).

Conclusion: Ach responsive patients who had increase coronary spastic tone was associated with recurrent chest pain and higher rate of follow up coronary angiography. Therefore, more intensive anti-spastic medication and close clinical follow up would be needed for these patients.



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The Impact of Metabolic Syndrome on Coronary Artery Spasm as Assessed with Intracoronary Acetylcholine Provocation Test

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Background: Metabolic Syndrome (MS) has been known to be an important cardiovascular risk factor. We investigated whether the presence of MS can impact on coronary artery spasm (CAS) as assessed with intracoronary acetylcholine (Ach) provocation test.

Methods: A total 3490 consecutive patients (pts) who underwent coronary angiography with Ach provocation test were enrolled. National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATP III) was used for the definition of the MS. The pts were divided into two groups; MS group (n=680, 19.5%) and non-MS group (n=2810, 80.5%) groups. Ach provocation test was performed by incremental dosage (20, 50, 100ug) into left coronary artery. Significant CAS was defined more than $>70\%$ luminal narrowing visually with chest pain with/without ST segment changes.

Results: Baseline characteristics were balanced between the two groups except the MS group had more elderly, hypertension, diabetes, dyslipidemia, and cerebrovascular accident, whereas the male gender, peripheral vascular disease, current smoking and alcohol were lower in the MS group. Angiography characteristics during Ach provocation test, the MS group showed higher incidence of QCA measured severe CAS, mean % narrowing and smaller mean diameter than non-MS group (Table).

Conclusion: According to our study, the MS pts had more coronary risk factors and worse angiographic characteristics during Ach provocation test, suggesting more careful medical therapy and follow up would be required.